Klamath River Estuary Water Quality Study - 2004

Joint Project by

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Abstract

In the summer/fall 2004 the Yurok Tribe Environmental Program (YTEP) and North Coast Regional Water Quality Control Board (Regional Water Board) conducted a water quality study of the Klamath River Estuary (Estuary). The purpose of the study was to assess the physical and chemical conditions of the Estuary from June through September with respect to water quality objectives and beneficial use support, and to provide the data necessary to build and calibrate a water quality model of the Estuary in support of Klamath River TMDL development efforts. There were three components of the study: (1) a bathymetry survey conducted by the California Department of Water Resources; (2) sediment oxygen demand measurements in the lower estuary; and (3) water quality monitoring surveys. The bathymetry survey data can be obtained by contacting Matt St. John (707-570-3762 mstjohn@waterboards.ca.gov). Results of the sediment oxygen demand measurements are reported on the Regional Water Boards Klamath River TMDL web page at: http://www.waterboards.ca.gov/northcoast/programs/tmdl/klamath/klamath.html.

The water quality monitoring surveys incorporated three tasks:

1. Continuous datasonde measurement of water temperature, dissolved oxygen (DO), pH, specific conductance, and salinity at two depths (near-surface and at depth) at two locations (lower and mid-estuary) and near the surface at one location (upper-estuary). Datasonde measurements were collected for two to six days once in June, July, August, and September;
2. Water quality cross sectional profiles at the datasonde locations once in June and twice in August; and
3. Discrete grab sample analysis of nutrients and oxygen consuming constituents at the datasonde locations and in the Pacific Ocean south of the mouth of the Klamath River collected twice in June (low and high tide), once in July, twice in August (bracketing Klamath and Trinity River pulse flows), and once in September.

Key findings of the water quality monitoring surveys include:

- There was no salt water influence at the upper estuary site (at Highway 101 bridge).
- Generally water temperature, DO and pH were lower at depth compared to surface readings.
- Generally water temperature, DO and pH were comparable laterally across the Estuary.
- Salt water influence on water quality was variable.
- Nutrient and chlorophyll a concentrations were relatively low, and most nitrogen and phosphorus was in the organic form.
- The Trinity pulse flow pushed the salt wedge downstream, reduced maximum water temperatures in the middle and lower Estuary by approximately 1° C, caused increased DO swings in the lower Estuary, and increased total phosphorus concentrations nearly four-fold.